


```

DDDDDDDD  BBBB BBBB  GGGGGGGG  GGGGGGGG  EEEEEEEEE  NN      NN
DDDDDDDD  BBBB BBBB  GGGGGGGG  GGGGGGGG  EEEEEEEEE  NN      NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NNNN     NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NNNN     NN
DD      DD  BBBB BBBB  GG      GG  GG      GG  EEEEEEEE  NN  NN  NN
DD      DD  BBBB BBBB  GG      GG  GG      GG  EEEEEEEE  NN  NN  NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NNNN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NNNN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NN
DD      DD  BB      BB  GG      GG  GG      GG  EE      NN      NN
DDDDDDDD  BBBB BBBB  GGGGGG  GGGGGG  EEEEEEEEE  NN      NN
DDDDDDDD  BBBB BBBB  GGGGGG  GGGGGG  EEEEEEEEE  NN      NN

```

```

RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RRRRRRRR      EEEEEEEEEEE      QQQQQQ
RR              RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ
RRRRRRRR      EEEEEEEEEEE      QQ      QQ
RR      RR      EE      QQ      QQ
RR      RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RR              RR      EE      QQ      QQ
RR              RR      EEEEEEEEEEE      QQQQ      QQ
RR              RR      EEEEEEEEEEE      QQQQ      QQ

```


DBGGEN.REQ - Require file for VAX/VMS DEBUG facility.

Version: 'V04-000'

```
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Modified by:
Bruce Olsen, 30 Aug 1979
Richard Title, 20 Aug 1981

29-Jun-80	DLP	Added literals for PL/I, PASCAL, and C
29-JAN-81	DLP	chs_per_lexeme is now 50
20-AUG-81	RT	Changed step_lvl_size and added step_source because of new command SET STEP SOURCE
20-JAN-82	RT	Moved CIS declarations from here to DBGLIB.
06-MAY-82	RT	Added structures for DEFINE

--

MACRO

```

NULL_POS_SIZE    =0, 0, 0%,      ! Null PSE for undotted references to
                                ! blocks
OPERAND_MODE      =0, 4, 4, 0%,   ! Mode part of an operand
OPERAND_VALUE     =0, 0, 4, 0%;   ! Value part of an operand

```

LITERAL

```

DBG_FAC_CODE      = 2 * 65536,    ! DEBUG facility code
THREAD_CODE       =1,             ! Conditional switch for threaded code
FATAL_BIT         =4,             ! Mask for fatal bit in error codes
ADD_THE_OFFSET    =1,             ! Add offset to value
SUB_THE_OFFSET    =0,             ! Subtract offset from value

```

```

! The next three literals used to be defined in SYSLIT.REQ

```

```

NO_OVERRIDE       = 0,            ! Use current length and radix
TTY_OUT_WIDTH     = 132,          ! Width of terminal line
TTY_ASCII_LEN     = 80,          ! Max size of character variable

```

```

! Values for register name tables

```

```

REGISTER_COUNT    =17,           ! Seventeen registers counting PSL

```

```

! size parameters

```

```

MAX_ASCII_LEN     = 4096,        ! Largest N in "ASCII:N"
MAX_STACK_PTR     =20,           ! Depth of the parser's parse stack.
NO_OF_INP_CHARS   =132,          ! Max number of characters in input line
                                ! ***Must be divisible by 4***
CHS_PER_LEXEME    =50,           ! Max number of characters in a single lexeme
                                ! ***Must be divisible by 4***
NO_OF_TOKENS      =30,           ! Max number of tokens permitted
                                ! ***Must be an even number***
MAX_BYTE_INT      = 127,         ! Largest byte integer
ALL_BPTS          =-1,           ! All breakpoints in chain
BPT_INSTRUCTION   =%X'03',       ! Opcode assignment for bpt instruction (srm revision 3)
BREAK_POINT       = 1,           ! Table entry is breakpoint
TRACE_POINT       = 2,           ! Table entry is tracepoint
WATCH_POINT       = 3,           ! Table entry is watchpoint

WRITE_WATCH       = 1,           ! Watchpoint is for write access
READ_WRITE_WATCH  = 2,           ! Watchpoint is for read/write access
EXECUTE_WATCH     = 3,           ! This is break or trace point

NUM_MAX_LENGTH    =11,           ! Maximum number of characters per numeric string
SYM_MAX_LENGTH    =31,           ! Maximum number of characters per symbol
UPPER_CASE_DIF    ='A' - 'a',    ! Difference between ASCII representation of upper and lower case
ASCII_OFFSET      =%X'60',       ! Offset from numeric value to ASCII value

```

```

! ASCII character representations

```

```

LINEFEED          =%X'12',       ! ASCII representation of linefeed

```


CARRIAGE_RET	=%X0'15'	:	ASCII representation of carriage return
ASC_AT_SIGN	=%ASCII 'a'	:	ASCII representation of an at sign
ASC_CLOS_PAREN	=%ASCII ')'	:	ASCII representation of closed parenthesis
ASC_COMMA	=%ASCII ','	:	ASCII representation of a comma
ASC_DOUB_QUOTE	=%ASCII '"'	:	ASCII representation of a double quote
ASC_MINUS	=%ASCII '-'	:	ASCII representation of a minus sign
ASC_OPEN_PAREN	=%ASCII '('	:	ASCII representation of open parenthesis
ASC_PERCENT	=%ASCII '%'	:	ASCII representation of a percent sign
ASC_PERIOD	=%ASCII '.'	:	ASCII representation of a period
ASC_PLUS	=%ASCII '+'	:	ASCII representation of a plus sign
ASC_POUNDS	=%ASCII '#'	:	ASCII representation of a pounds sign
ASC_QUOTE	=%ASCII ''	:	ASCII representation of a quote character
ASC_SPACE	=%ASCII ' '	:	ASCII representation of a space
ASC_SQ_CLO_BRK	=%ASCII ']'	:	ASCII representation of a closed square bracket
ASC_SQ_OPN_BRK	=%ASCII '['	:	ASCII representation of an open square bracket
ASC_TAB	= 9	:	ASCII representation of a tab
ASC_UP_ARROW	=%ASCII '^'	:	ASCII representation of an up arrow

: The 'mode' data structure is really just
: a byte vector with the following characteristics.

MODE_LVL_SIZE	=10,	:	Number of bytes in each level.
MODE_LEVELS	=4,	:	Number of levels for mode settings

: Each level of the mode data structure has the following entries:

MODE_RADIX	=0,	:	Radix - dec, hex, oct, etc.
MODE_LENGTH	=1,	:	Length - long, word, byte, etc.
MODE_SYMBOLS	=2,	:	Boolean -> whether we know values as "extern + offset" or not.
MODE_INSTRUC	=3,	:	Boolean -> whether we input/output values as machine instruction.
MODE_ASCII	=4,	:	Boolean -> whether we output (only!) values as ASCII strings or not.
MODE_SCOPE	=5,	:	Whether or not there is a CSP, (and whether we should apply it)
MODE_GLOBALS	=6,	:	Whether or not we should apply global scope first in the search rules.
MODE_FORTTRAN	=7,	:	%LINE, %LABEL
MODE_IMMEDIATE	=8,	:	FORTTRAN address or contents of mode
MODE_G_FLOATS	=9,	:	Set the mode to G_FLOAT, so we can pick up the constant as G_FLOAT constant

: The four levels have the following names and indices.

DEFAULT_MODE	=0,	:	Default system initialized mode
USER_DEF_MODE	=1,	:	User-set default mode
OVERRIDE_MODE	=2,	:	One-line override mode
LOCAL_MODE	=3,	:	Local mode

: The mode_length field should be one of the following.

BYTE_LENGTH	=1,	:	Byte length
-------------	-----	---	-------------


```
WORD_LENGTH      =2,           ! Word length
LONG_LENGTH      =4,           ! Longword length
```

! And the mode_radix field should be one of:

```
DECIMAL_RADIX    =10,          ! Decimal radix
HEX_RADIX        =16,          ! Hexadecimal radix
OCTAL_RADIX      =8,           ! Octal radix
BINARY_RADIX     =2,           ! Binary radix
```

! The FORTRAN mode fields are as follows:

```
LABEL_MODE       =1,           ! Numbers are label numbers
LINE_MODE        =2,           ! Numbers are line numbers
LITERAL_MODE     =3,           ! Numbers are literal values
```

! The 'STEP' data structure is really just a byte vector with the following characteristics. It is isomorphic to the 'mode' structure.

```
STEP_LVL_SIZE    =4,           ! Number of bytes in each level.
STEP_LEVELS      =3,           ! Number of levels for step settings
```

! Each level of the step data structure has the following entries:

```
STEP_LINE        =0,           ! LINE or INSTRUCTION (a boolean)
STEP_NOSYSTEM    =1,           ! [NO]SYSTEM steps (a boolean)
STEP_OVER        =2,           ! INTO or OVER (a boolean)
STEP_SOURCE      =3,           ! SOURCE or NOSOURCE
```

! The three levels have the following names and indices.

```
DEFAULT_STEP     =0,           ! Default system initialized step
USER_DEF_STEP    =1,           ! User-set default step type
OVERRIDE_STEP    =2,           ! One-line override step type
```

! The data structure which holds the settings for SET SEARCH is a byte vector with the following characteristics (it works the same as the STEP data structure above)

```
SEARCH_LVL_SIZE  = 2,
SEARCH_LEVELS    = 3,
```

! Each level of the data structure has the following entries

```
SEARCH_ALL = 0,
SEARCH_IDENT = 1,
```

! The three levels have the following names and indices

```
DEFAULT_SEARCH = 0,
USER_DEF_SEARCH = 1,
```


OVERIDE_SEARCH = 2,

! The data structure which holds the settings for SET DEFINE is
! a byte vector with the following characteristics (it works the
! same as the STEP data structure above)

DEFINE_LVL_SIZE = 1,
DEFINE_LEVELS = 3,

! Each level of the data structure has only one entry

DEFINE_ONLY = 0,

! The three levels have the following names and indices

DEFAULT_DEFINE = 0,
USER_DEF_DEFINE = 1,
OVERRIDE_DEFINE = 2,

! The output configuration data structure is comparable to the STEP or
! MODE data structures except that it has only one level. It is used
! to store information pertaining to DEBUG's output setting.

OUTPUT_SIZE = 3, ! Number of bytes in the data structure

! The following entries are contained in the output config vector:

OUT_LOG	= 0,	! LOG or NOLOG
OUT_TERM	= 1,	! TERMINAL or NOTERMINAL
OUT_VERIFY	= 2,	! VERIFY or NOVERIFY
OUT_SCREEN	= 3,	! SCREEN_LOG or NOSCREEN_LOG

! Used to identify the flavor of type between dbg\$show_type and its
! callers.

DEFAULT = 0,
OVERRIDE = 1,

! Bit configurations for context flags.

CONTEXT_BITS = 32, ! Number of context bits

! Position of opcode byte at a breakpoint

OPCODE_BYTE = 0, ! Opcode offset

! Location types for end range arguments


```

!
MEMORY_LOC      =0,          ! Memory location

! Names of exception types for traceback.
!
NOT_AN_EXC      =0,          ! Line number searching for pc
TRAP_EXC        =1,          ! PC of trap searching for line number
FAULT_EXC       =2,          ! PC of fault searching for line number
LOOKUP_EXC      =3;         ! Like TRAP only don't do VAL_TO_SYM
                           ! again.

! Literals to define the various address spaces in the VAX architecture.
!
LITERAL
SYSTEM_SPACE    = %X'80000000',
P1_SPACE        = %X'40000000';

LITERAL
! Language names
!
LANG_MACRO      = 0,
LANG_FORTRAN    = 1,
LANG_BLISS      = 2,
LANG_COBOL      = 3,          ! COBOL
LANG_BASIC      = 4,          ! BASIC+2
LANG_PLI        = 5,          ! PL/I
LANG_PASCAL     = 6,          ! Pascal
LANG_C          = 7,          ! C
MAX_LANGUAGE    = 6;         ! Languages 0 - 6 (C not supported yet)

! The semantic stack is a BLOCKVECTOR for which the following fields
! are defined...
!
FIELD STACK_FIELDS =
SET
STK$V_BASE      = [0,0,0,0],   ! Base of block.
STK$V_VAL1      = [0,0,32,0],  ! First value field
STK$V_VAL2      = [1,0,32,0],  ! Second value field
STK$V_NT_PTR    = [2,0,32,0],  ! Pointer to name table entry
STK$V_INDEX     = [3,0,16,0],  ! Index field
STK$V_OFFSET    = [3,16,16,0], ! Offset field
STK$V_POS       = [4,0,16,0],  ! Position field
STK$V_TYPE      = [4,16,8,0],  ! Token type field
STK$V_SIZE      = [4,24,8,0],  ! Size field
STK$V_EXT       = [5,0,1,0],    ! Sign extension bit
STK$V_REF       = [5,1,1,0],    ! Is token a REF bit
STK$V_IMMED     = [5,2,1,0],    ! Immediate mode bit
STK$V_ARGS      = [5,3,1,0],    ! Access actuals supplied bit
STK$V_FLDRF     = [5,4,2,0],    ! <field_ref> supplied flag
STK$V_DOT       = [5,6,1,0],    ! Indirection flag
STK$V_STRUC     = [5,8,4,0],    ! Kind of BLISS structure
TES;

```


LITERAL

```
STACK_ENTRY_SIZE = 6,      ! No of longwords in a semantic_stack BLOCK
NO_STRUC          = 0,      ! BLISS structure types
VECTR             = 1,
BITVEC           = 2,
BLOK              = 3,
BLOCKVEC         = 4;
```

MACRO

```
SEMANTIC_STACK = BLOCKVECTOR[20, STACK_ENTRY_SIZE] FIELD(STACK_FIELDS)%;
```

```
! General purpose structure for manipulation of singly linked lists. Each cell
! contains two long-word fields. The first is a pointer to the next list link
! cell; the second is a pointer to the current element in the list.
```

LITERAL

```
LIST_LINK_SIZE = 8;      ! Bytes in a list link cell
```

FIELD LIST_LINK_FLDS =

```
SET
NEXT_ONE_PTR   = [0,0,32,0], ! Pointer to the next link cell
THIS_ONE_PTR   = [4,0,32,0] ! Pointer to the current object in the list
TES;
```

MACRO

```
LIST_LINK = BLOCK[LIST_LINK_SIZE, BYTE] FIELD(LIST_LINK_FLDS)%;
```

```
! End of DBGGEN.REQ
```


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AH-BT13A-SE
VAX/VMS V4.0

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